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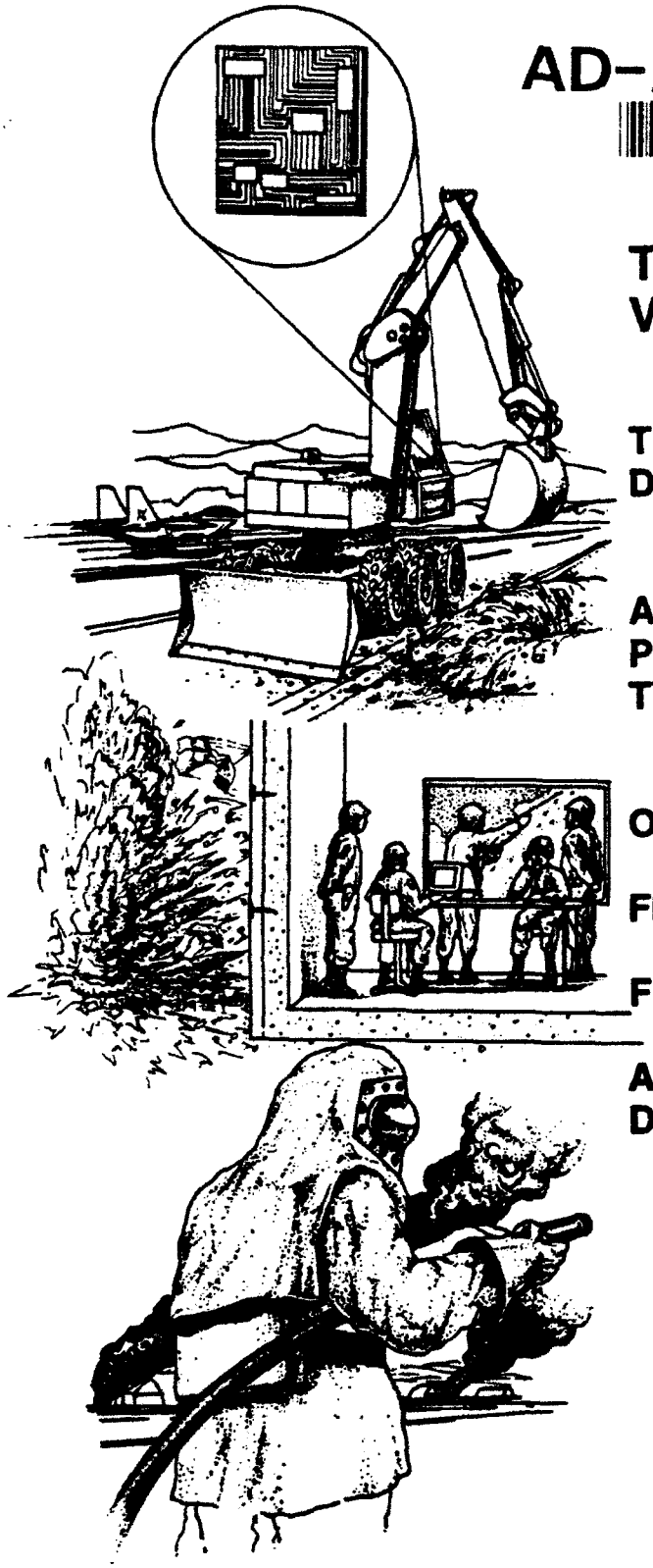
Volume VI



THE POST-DAM SYSTEM
VOLUME VI - CROSSTALK MK.4

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Mission accomplishment in PACAF and USAFE depends on base recovery capability in a postattack environment. Base recovery includes identifying, analyzing, and repairing facility damage. For facilities critical to sortie generation, this process must be accomplished expediently.

In a postattack environment, field information on facility damage is collected and analyzed to determine structural integrity and usability. From this analysis, a repair schedule is developed. This is currently a time comsuming process that is shortened by using a computerized system.

The scope of this effort was to develop a computerized postattack damage assessment system that recommends repair strategies, keeps inventory of materials and equipment, and schedules repairs based on manpower and equipment availability.

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EXECUTIVE SUMMARY

A. OBJECTIVE

The objective of this report is to describe the software and hardware of the POST-DAM System, developed by Applied Research Associates, Inc., for airbase facility postattack damage assessment. This report contains descriptions of prototype software and hardware, and recommendations for full-scale development of both software and hardware.

B. BACKGROUND

In a postattack environment, field information on mission-critical facility damage is collected and analyzed to determine structural integrity and usability. From this analysis, a repair schedule is developed. This is a time-consuming process when done without the aid of a computerized system. Consequently, the POST-DAM System was developed to determine repair strategies with an expert system, keep track of materials and equipment with a relational database management system, and schedule repairs based on manpower and equipment availability with a project management system.

C. SCOPE

This technical report consists of nine volumes. Volume I describes software and hardware used with the prototype POST-DAM System, and recommends software and hardware for full-scale development. Volumes II through VIII are software user's manuals, which describe how to install and use the prototype software with the POST-DAM System. Volume IX is a field manual that contains diagrams of structures that are used with the POST-DAM system to locate damaged elements.

D. EVALUATION METHODOLOGY

The prototype POST-DAM System was developed using commercial, off-the-shelf (COTS) software and hardware. The system was constructed by integrating the software and hardware in such a way that a remote computer in the field can communicate with a host computer in the Base Civil Engineering (BCE) Damage Control Center (DCC). The POST-DAM system determines repair strategies, keeps track of materials and equipment, and schedules repairs based on manpower and equipment availability. This prototype system has been evaluated in-depth, and subsequent recommendations are made herein about software and hardware that should be used for full-scale development.

E. CONCLUSIONS

The prototype POST-DAM System is functional, but has limitations with respect to both hardware and software. The following problems were encountered:

1. The prototype remote computer is not portable, and cannot be used in the field. No satisfactory, hand-held remote terminal was available for this project.

2. The expert system cannot hold all the information required for full-scale development, because it cannot use extended memory.

3. Both the relational database management system and project management system require more human interaction than desired.

4. The communication system software is not compatible with the Survivable Base Recovery After Attack Communication System (SBCS) being developed for ESD by Sumaria Systems, Inc., with which the POST-DAM System is required to interface.

F. RECOMMENDATIONS

For full-scale development, the following features should be incorporated in the POST-DAM System.

1. Replace the prototype remote computer with a hand-held terminal unit having at least 2 Mb of random access memory, and which can run applications requiring 640 Kb of base memory.

2. Replace the prototype host computer with a system having at least 4 Mb of random access memory, IEEE 802.3 LAN ports, and able to support multi-tasking operations.

3. Replace the CLIPS expert system shell with an expert system shell capable of supporting applications at least twice as large as those developed for the prototype system.

4. Set the host computer up to interface with the IEEE 802.3 Ethernet local area network (LAN) used by SBCS.

5. Construct a single computer program to replace the relational database management system and the project management system, to minimize the required amount of human intervention. This system should be developed by personnel with a strong background in computer science.

PREFACE

This report was prepared by Applied Research Associates, Inc. (ARA), P.O. Box 40128, Tyndall Air Force Base, FL 32403, under Contract F08635-88-C-0067, for the Air Force Civil Engineering Support Agency, Tyndall Air Force Base, Florida.

This report (Volumes I though IX) summarizes work completed between 1 February 1989 and 1 March 1991. Lt. James Underwood (USN) was the HQ AFCESA/RACS Project Officer.

This report has been reviewed by the Public Affairs Office, and is releasable to the National Technical Information Service (NTIS). At NTIS it will be available to the public, including foreign nations.

This technical report has been reviewed and is approved for publication.

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SECTION 1

INTRODUCTION

1.1 OBJECTIVE

The objective of this software user's manual (SUM) is to explain the procedures for setting up and using the Crosstalk Mk.4 communication software on the host computer to receive files created by the POST-DAM Expert System, which runs on a remote computer in the field.

1.2 BACKGROUND

Crosstalk Mk.4 is a complete communication package for use with an IBM PC, PC/XT, PC/AT, PS/2, or 100 percent compatible computer. Crosstalk Mk.4 provides emulation of 21 different terminal types, 11 error-free file transfer protocols, unattended call-in access and password protection in answer mode, Crosstalk Application Script Language (CASL) for full automation of communication tasks, and operation in multitasking environments. Crosstalk Mk.4 is a commercial software package distributed by Digital Communications Associates, Inc.

1.3 APPROACH

Crosstalk Mk.4 runs in the background on the host computer, using the multitasking, multi-windowing DESQview 386 control program. After starting DESQview 386, the user starts Crosstalk Mk.4 and sets it to answer incoming calls. With Crosstalk Mk.4 running in the background, equipment, material, and repair strategy files generated by POST-DAM expert systems are transferred from remote computers in the field to the **C:\PDAM** directory of the host computer. At the same time, using the multitasking capabilities of DESQview 386, the user processes other files using the POST-DAM Relational Data Base Management System (RDBMS), Harvard Project Manager (HPM), or TED 1.1 Text Editor.

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SECTION 2

APPLICABLE DOCUMENTS

2.1 SETA CONTRACT

2.1.1 Postattack Damage Assessment of Facilities, Subtask 2.02, Air Force Engineering and Services Center, SETA Contract F08635-88-C-0067, December 87.

2.1.2 Postattack Damage Assessment of Facilities, Subtask 2.02.1, Air Force Engineering and Services Center, SETA Contract F08635-88-C-0067, October 88.

2.1.3 Postattack Damage Assessment of Facilities, Subtask 2.02.2, Air Force Engineering and Services Center, SETA Contract F08635-88-C-0067, February 89.

2.2 POST-DAM SYSTEM USER'S MANUALS

2.2.1 The POST-DAM System, Volume 1, Introduction to the POST-DAM System, Applied Research Associates, Inc., Report to AFESC/RDCS, March 91.

2.2.2 The POST-DAM System, Volume 2, Software User's Manual for the Expert System, Applied Research Associates, Inc., Report to AFESC/RDCS, February 91.

2.2.3 The POST-DAM System, Volume 3, Software User's Manual for DESQview 386, Applied Research Associates, Inc., Report to AFESC/RDCS, December 90.

2.2.4 The POST-DAM System, Volume 4, Software User's Manual for the Relational Data Base Management System, Applied Research Associates, Inc., Report to AFESC/RDCS, December 90.

2.2.5 The POST-DAM System, Volume 5, Software User's Manual for the Harvard Project Manager, Applied Research Associates, Inc., Report to AFESC/RDCS, December 90.

2.2.6 The POST-DAM System, Volume 7, Software User's Manual for TED 1.1 Editor, Applied Research Associates, Inc., Report to AFESC/RDCS, December 90.

2.2.7 The POST-DAM System, Volume 8, Software User's Manual for Crosstalk Mk.4 on the Remote Computer, Applied Research Associates, Inc., Report to AFESC/RDCS, March 91.

2.2.8 The POST-DAM System, Volume 9, Field Manual of Mission-Critical Facilities for Use With the Prototype POST-DAM System, Applied Research Associates, Inc., Report to AFESC/RDCS, March 91.

2.3 SOFTWARE USER'S MANUALS

2.3.1 Crosstalk Mk.4 User's Guide, Digital Communications Associates, Inc., 1989.

2.3.2 Crosstalk Mk.4 Connection Options, Digital Communications Associates, Inc., 1989.

2.3.3 Crosstalk Mk.4 CASL Reference, Digital Communications Associates, Inc., 1989.

SECTION 3

INSTRUCTIONS FOR USE

3.1 INSTALLING CROSSTALK MK.4

This section of the SUM describes the system requirements for Crosstalk Mk.4, how to install the Crosstalk Mk.4 files on the hard disk, how to set up Crosstalk Mk.4, and how to setup the ANSWER directory to answer incoming calls and transfer files into the **C:\PDAM** subdirectory of the host computer.

3.1.1 System Configuration

Crosstalk Mk.4 is designed to run with MS-DOS, or PC-DOS 2.0 or higher on an IBM PC, PC/XT, PC/AT, PS/2, or 100% compatible microcomputer, with 320K random access memory (RAM), color or monochrome monitor, hard disk, and a 5.25 inch floppy disk drive. For more information about system requirements, see the Crosstalk Mk.4 User's Guide.

3.1.2 Installing Crosstalk Mk.4 Files

The Crosstalk Mk.4 files are installed using an install program. To run the install program, the user places Crosstalk Mk.4 Program Disk Number 1 into Floppy Drive A:, and then from the root directory types

C:\>A:INSTALL [Enter]

The information shown in Figure 3.1 appears on the screen, and the user is prompted to press [Enter] to continue. The user presses **[Enter]**, and is prompted to choose the drive and directory to which the Crosstalk Mk.4 files will be installed, as shown in Figure 3.2. The user presses **[Enter]**, and the files are installed to the subdirectory **C:\XTALK4**, and the user is prompted about which files to copy, as shown in Figure 3.3. The user then selects G by pressing **[Enter]**, and User Interface Information appears on the screen, as shown in Figure 3.4. The user presses **[Enter]**, and is prompted to install Menu Interface files, as shown in Figure 3.5. The user then presses **[Enter]**, and is prompted to install the Crosstalk XVI interface, as shown in Figure 3.6. The user presses **[Enter]**, and the install program begins installing files.

After the files from Program Disk 1 have been copied, the user is prompted to insert Disk 2 into Floppy Drive A:, as shown in Figure 3.7. The user then removes Program Disk 1 from Floppy Drive A:, inserts Program Disk 2, and presses **[Enter]**. This process is continued until all required files have been copied from all four program disks. After all required files are copied, the information shown in Figure 3.8 appears on the screen, informing the user that installation has been completed. The user then presses **[Enter]**, and is exited to the DOS prompt shown in Figure 3.9.

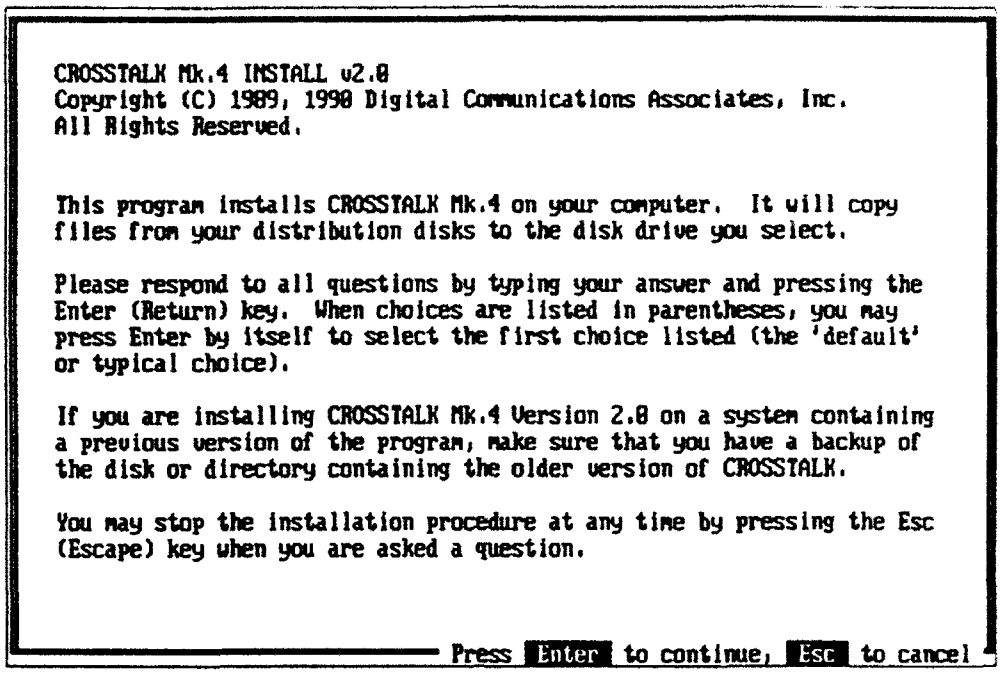

Figure 3.1. Crosstalk Mk.4 Install Information.

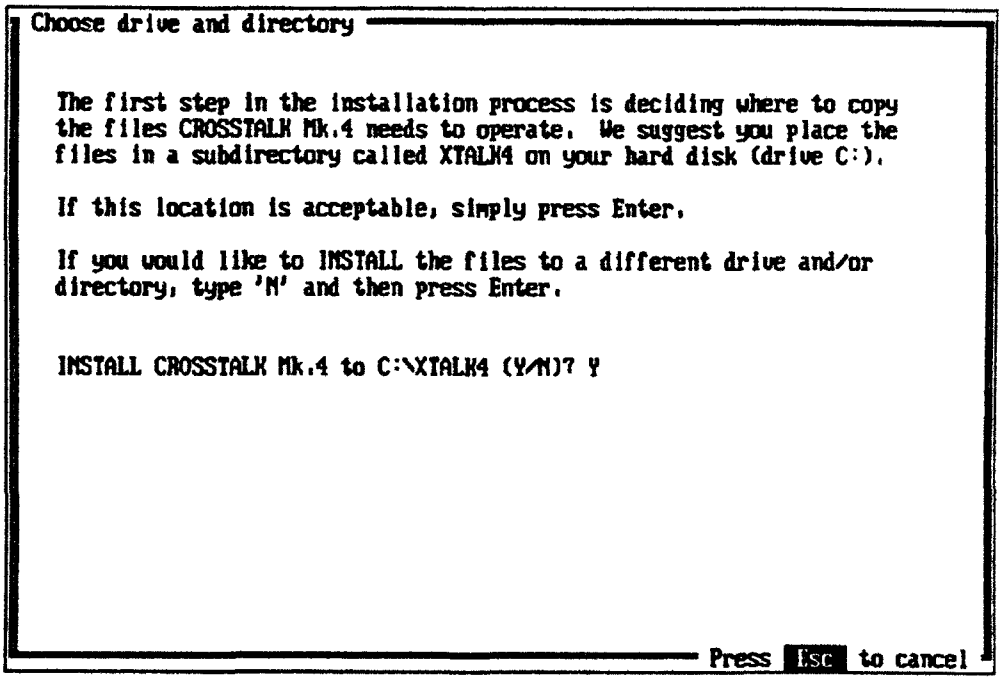

Figure 3.2. Choose Drive and Directory.

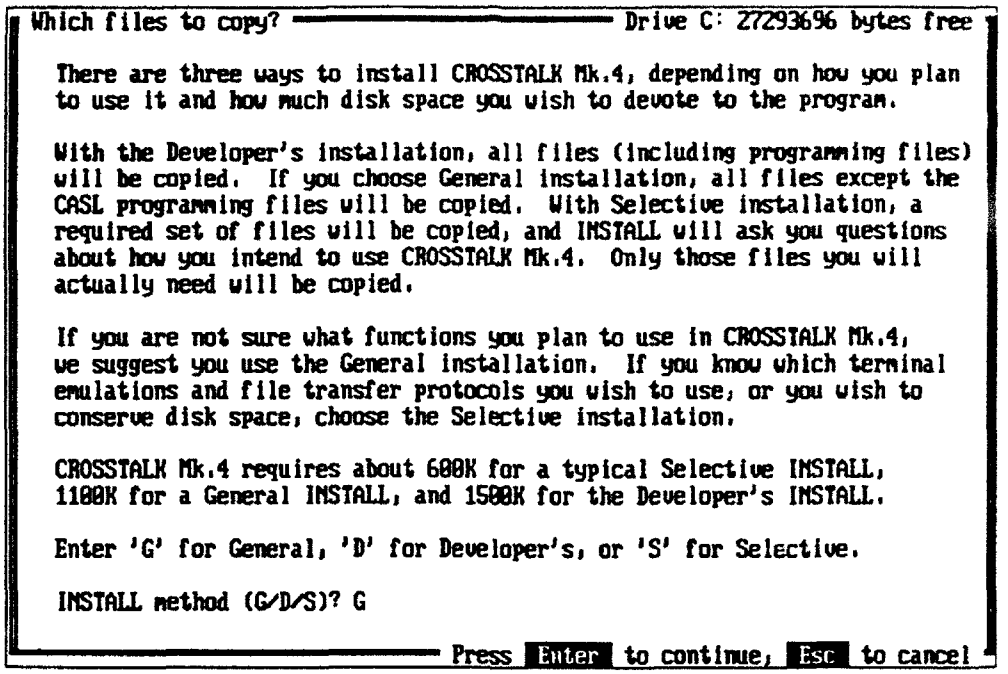

Figure 3.3. Select Files to Copy.

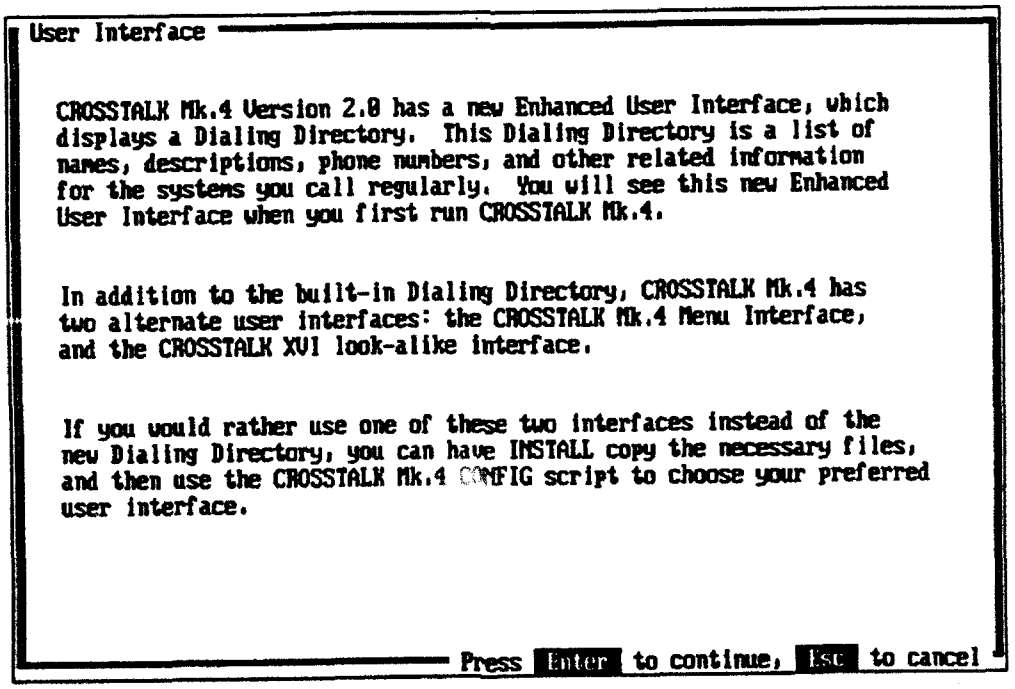

Figure 3.4. User Interface Information.

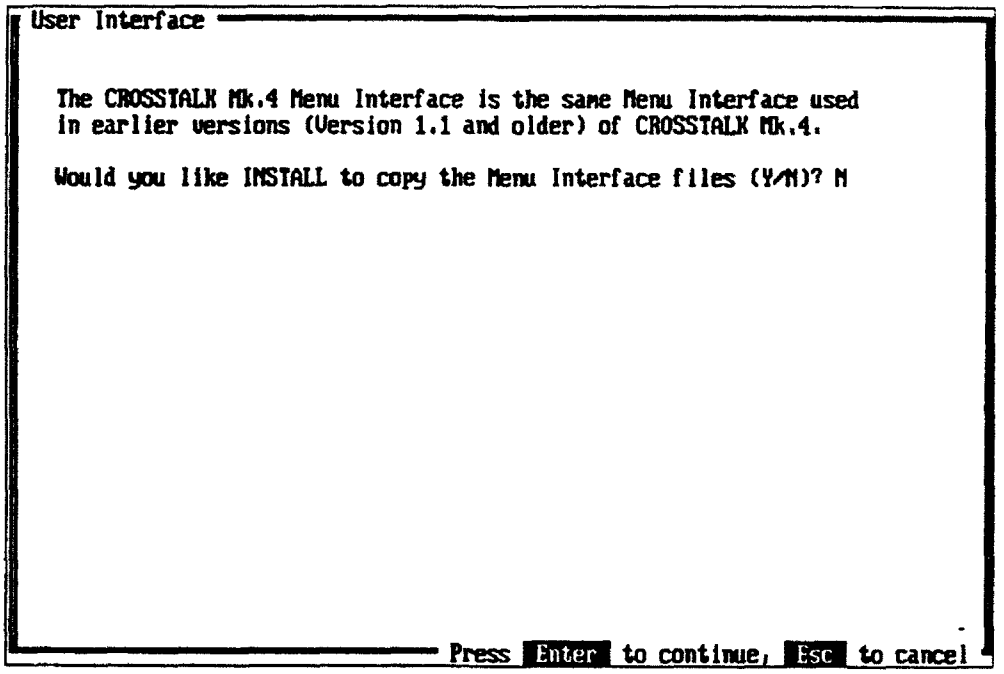

Figure 3.5. Install Menu Interface Files.

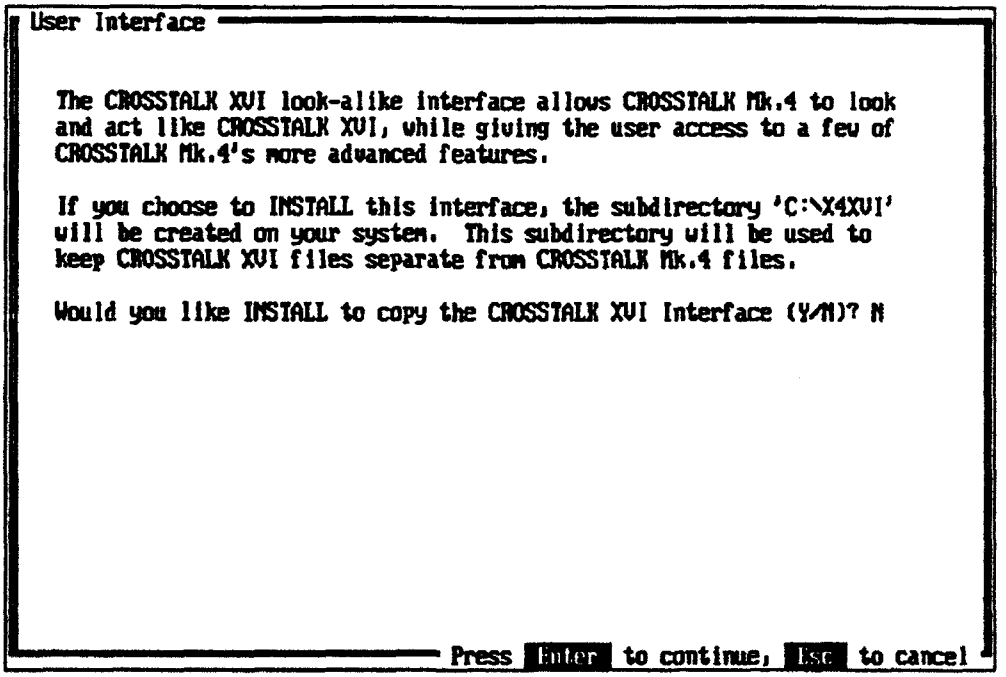

Figure 3.6. Install Crosstalk XVI Interface.

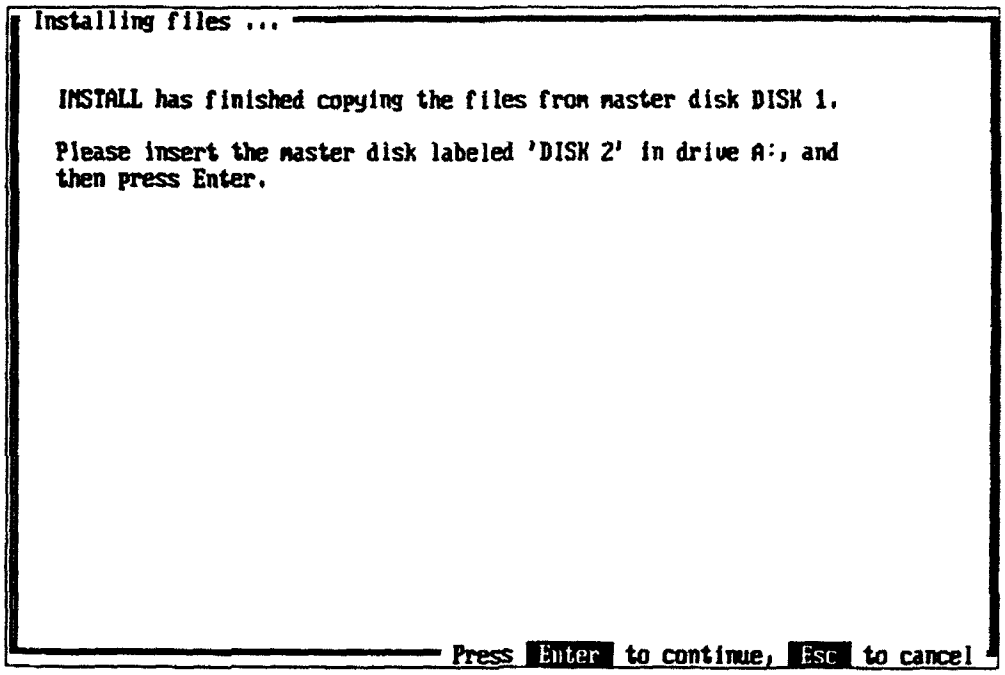

Figure 3.7. Install Program Disk 2.

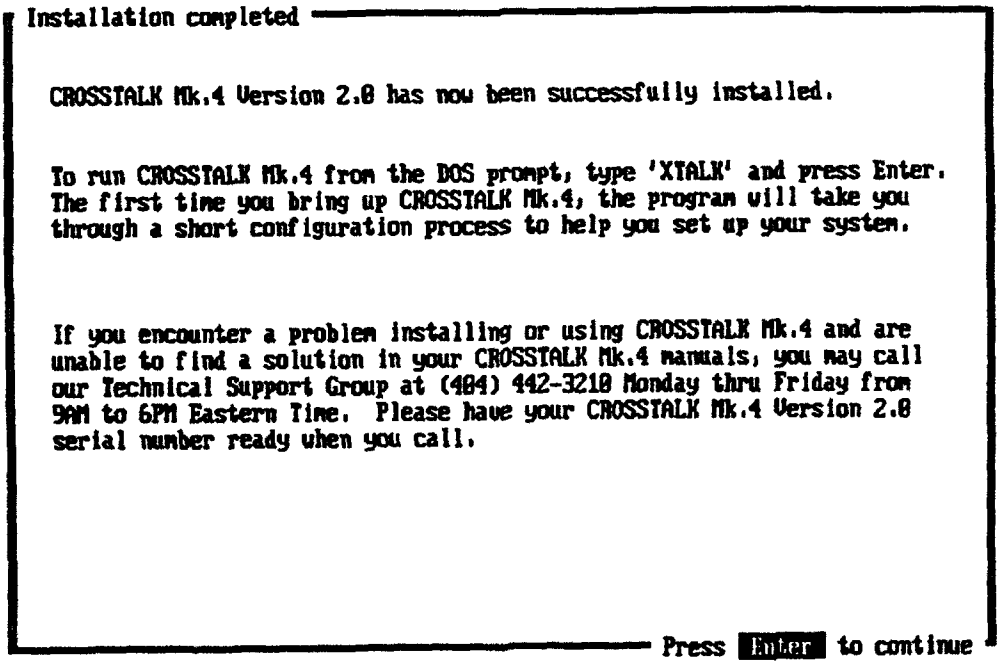

Figure 3.8. Installation Completed.

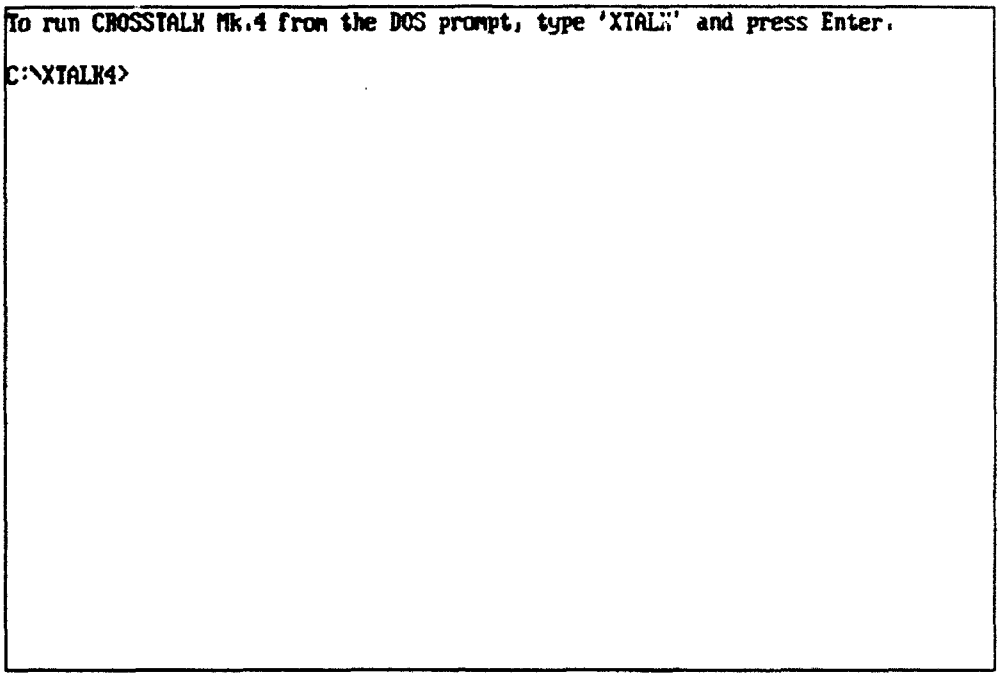

Figure 3.9. DOS Prompt at XTALK4 Subdirectory.

3.1.3 Setting Up the Crosstalk Mk.4 System

To configure the Crosstalk Mk.4 system on the host computer, the user starts at the DOS prompt in the XTALK4 subdirectory, as shown in Figure 3.9, and types

C:\XTALK4>XTALK [Enter]

The crosstalk title screen appears as shown in Figure 3.10, and then the configuration information appears as shown in Figure 3.11. The user presses [Enter], and is prompted about the type of monitor being used, as shown in Figure 3.12. Here, the user presses [Enter] for a color monitor, and the supplemental information screen appears, as shown in Figure 3.13. The user then presses the [Esc] key, and is prompted to use Port 1 with Crosstalk, as shown in Figure 3.14. Here, the user presses [Enter] for yes, and is prompted to select a modem type, as shown in Figure 3.15. Using the arrow keys, the user selects Direct Connect (no modem), and then presses [Enter]. The user is then prompted to use Port 2 with Crosstalk, as shown in Figure 3.16. Here, the user presses [Enter] for yes, and is then prompted to select a modem type, as shown in Figure 3.17. Using the arrow keys, the user selects 2400-baud Hays compatible, presses [Enter], and the information shown in Figure 3.18 appears on the screen. The user then uses the space bar and arrow keys to set normal port equal to 2, and normal speed equal to 2400, as shown in Figure 3.19. When the values are

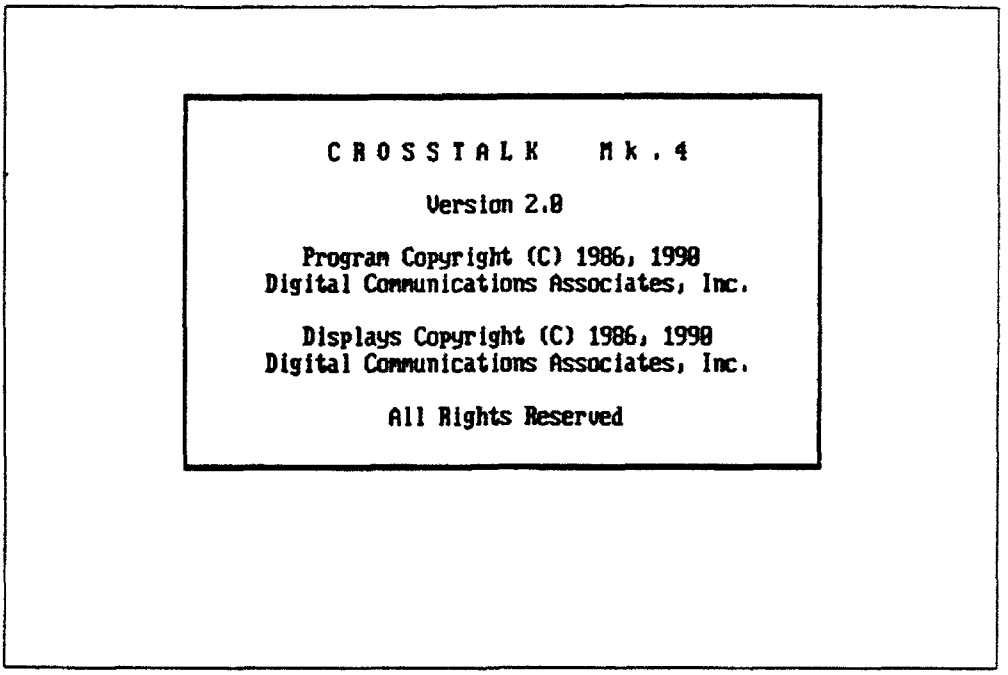

Figure 3.10. Crosstalk Mk.4 Title Screen.

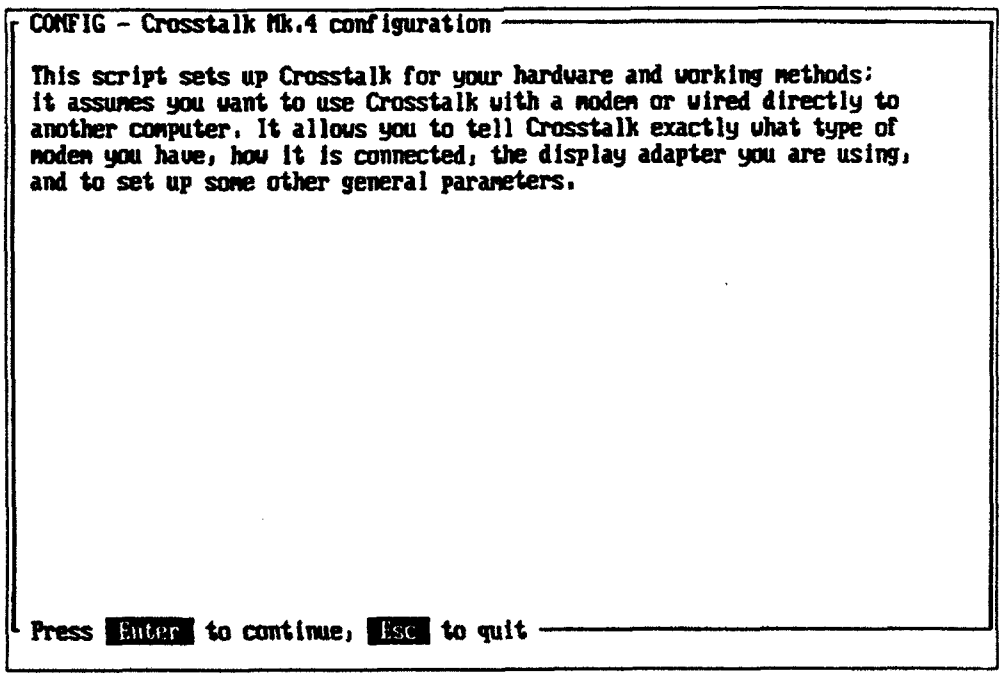

Figure 3.11. Configuration Information.

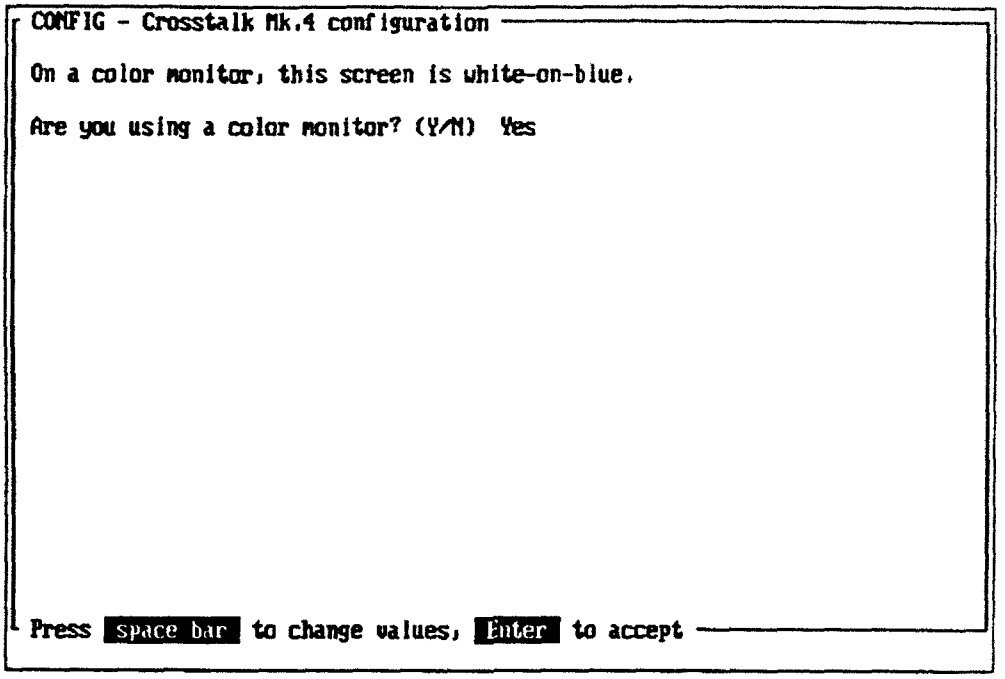

Figure 3.12. Color Monitor Prompt.

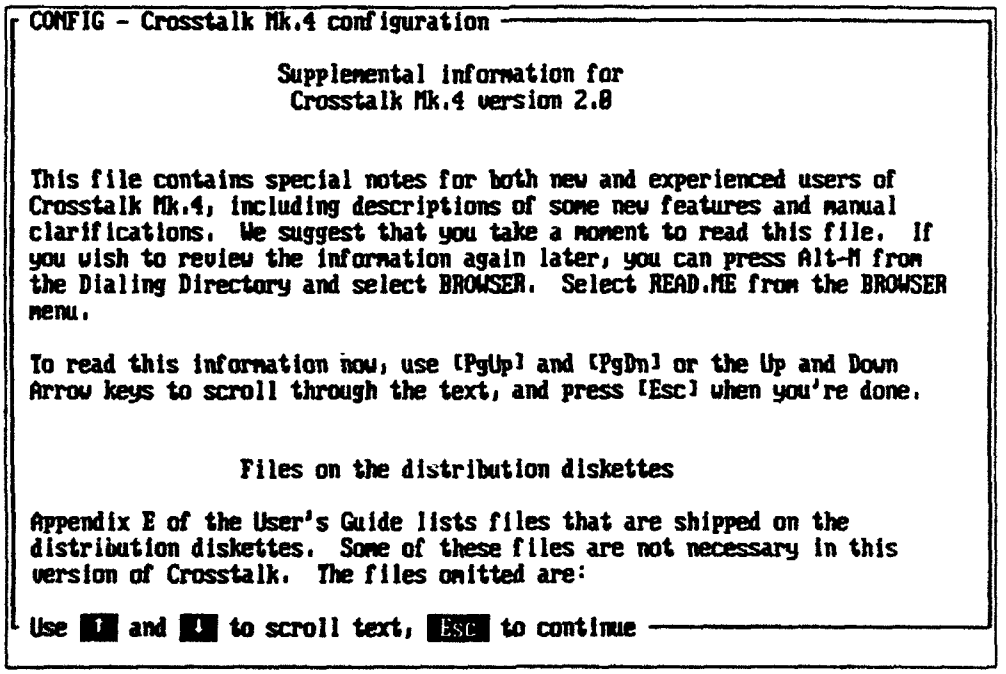

Figure 3.13. Supplemental Information.

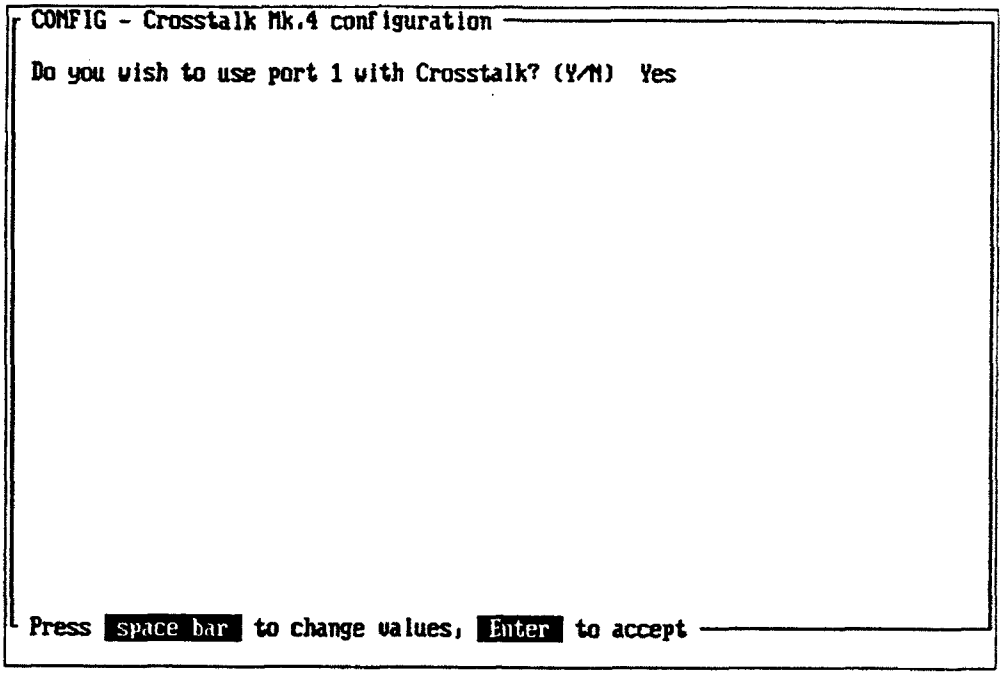

Figure 3.14. Port 1 Prompt.

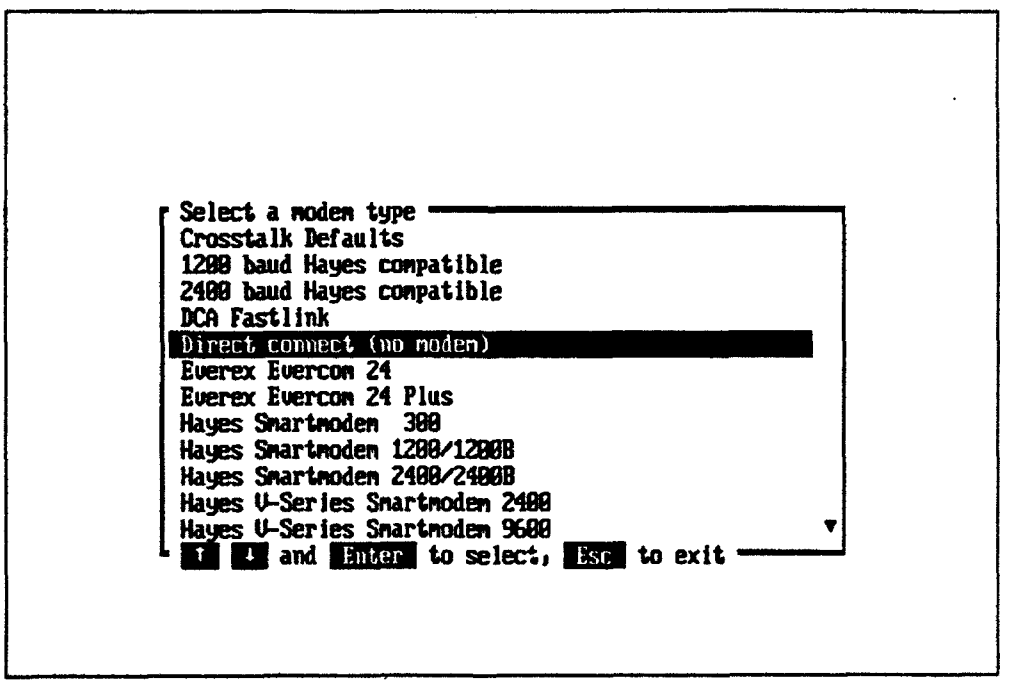

Figure 3.15. Modem Type for Port 1.

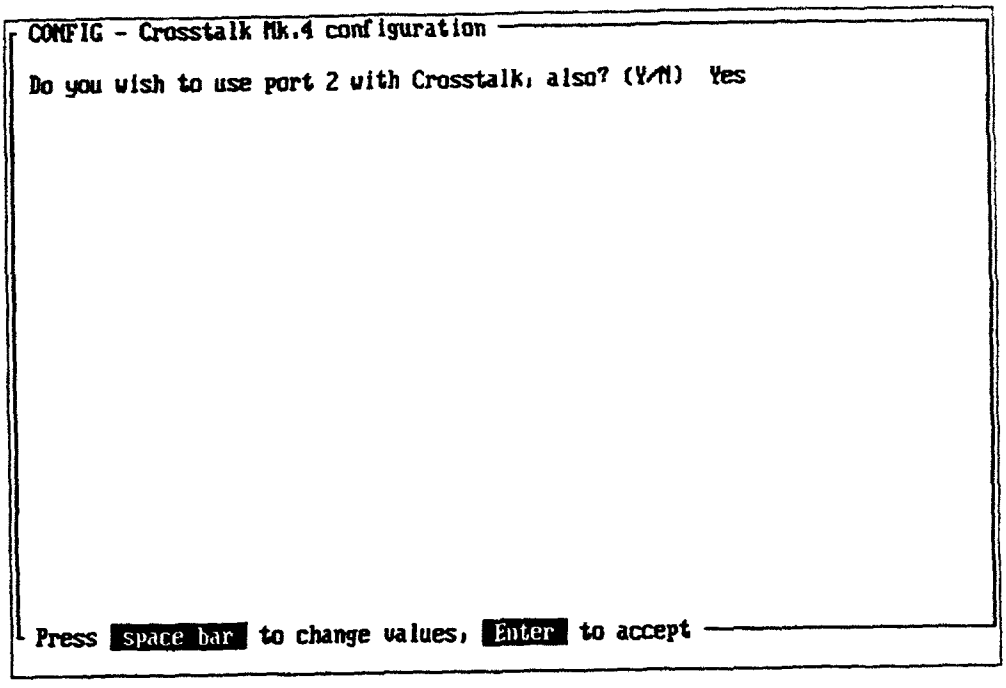

Figure 3.16. Port 2 Prompt.

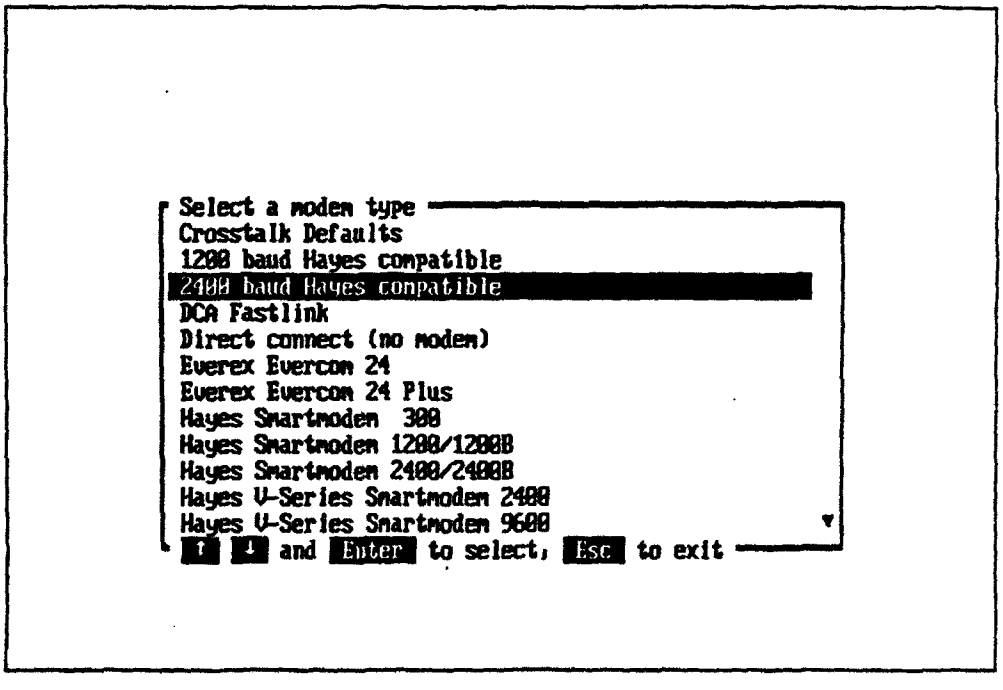

Figure 3.17. Modem Type for Port 2.

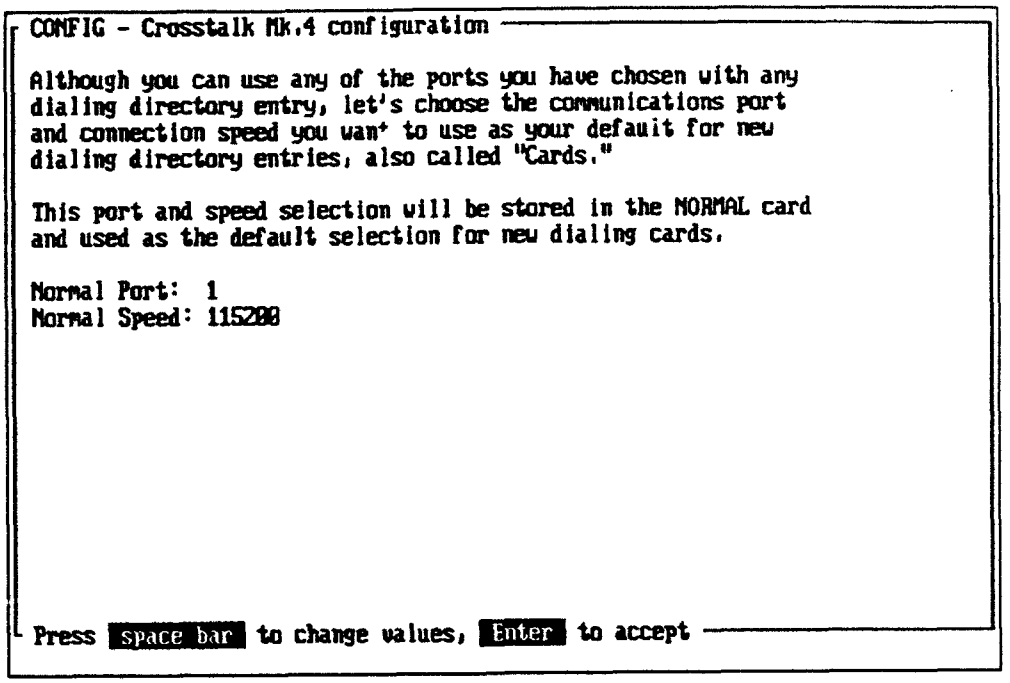

Figure 3.18. Default Port Prompt.

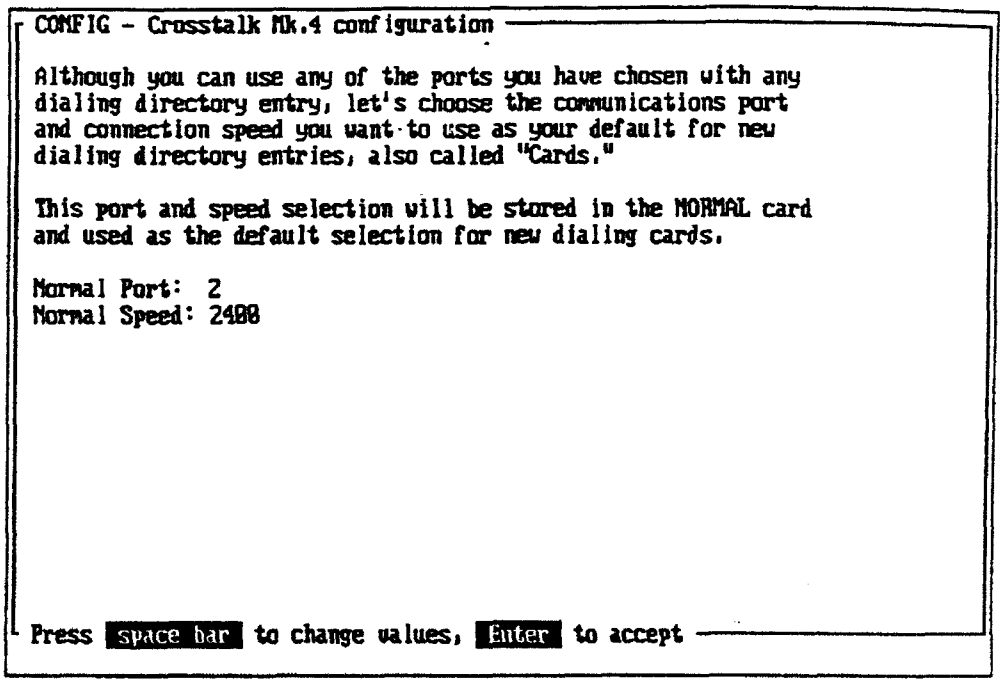

Figure 3.19. Required Default Port Settings.

correct, the user presses [Enter], and is prompted for an out number prefix, as shown in Figure 3.20. Here, the user presses [Enter] because an out number is not required with the POST-DAM host computer, and is then prompted for a LD number, as shown in Figure 3.21. The user presses 1 and then [Enter], and the information screen for setting changes appears, as shown in Figure 3.22. The user then presses [Enter], and the Crosstalk Dialing Directory appears, as shown in Figure 3.23.

3.1.4 Setting Up ANSWER

From the Dialing Directory, as shown in Figure 3.23, the user uses the arrow keys to highlight ANSWER, as shown in Figure 3.24. The user then presses [Enter], and the ANSWER Setup Menu appears, as shown in Figure 3.25, prompting the user for the port and speed. The Port is already set to 2, and the speed to 2400, so the user then presses [Enter] twice to continue. The user is then prompted to enter a password, as shown in Figure 3.26, where ARA has been selected as the password for the POST-DAM system. The user types ARA, then [Enter], and the ANSWER Directory appears, as shown in Figure 3.27. The user then presses the [Esc] key, and the Dialing Directory appears, as shown in Figure 3.24. Here, the user presses the [Alt] and [S] keys simultaneously, and the Session Setup Form appears, as shown in Figure 3.28, with the cursor at Name. Using the arrow keys to move the cursor, the user edits the Session Setup Form so the data corresponds to that shown in Figure 3.29. Next, the user presses the [PgDn] key, and edits Page 2 of the Session Setup Form so the data corresponds to that shown in Figure 3.30. When Session Setup Form editing is complete, the user presses the [Ctrl] and [Enter] keys simultaneously, and the save setup prompt appears, as shown in Figure 3.31. The user then presses [Enter] to save the configuration, and automatically return to the Dialing Directory Form, shown in Figure 3.24. Here, the user presses the [Alt] and [Q] keys simultaneously, and is prompted to quit Crosstalk Mk.4, as shown in Figure 3.32. At this point, the user presses [Enter], and returns to the C:\XTALK4 subdirectory, and the installation is complete.

3.2 STARTING CROSSTALK MK.4

Crosstalk Mk.4 is executed from DESQview 386, as described in Section 3.4 of Document 2.2.3. After starting Crosstalk Mk.4, the title screen appears as shown in Figure 3.10; then the Dialing Directory appears automatically, as shown in Figure 3.33.

3.3 USING CROSSTALK MK.4

From the Dialing Directory shown in Figure 3.33, the user presses [Enter], and the ANSWER Directory appears, as shown in Figure 3.34. The user then uses DESQview 386 to run other programs, as described in Section 3.4 of Document 2.2.3, while Crosstalk Mk.4 runs in the background.

When the remote computer running the POST-DAM expert system (PDES) calls in to send files, Crosstalk Mk.4 prompts the caller for user identification and the password. If these are given correctly, the expert system files are automatically transferred from the remote computer into the C:\PDAM directory of the host computer, with no user interaction.

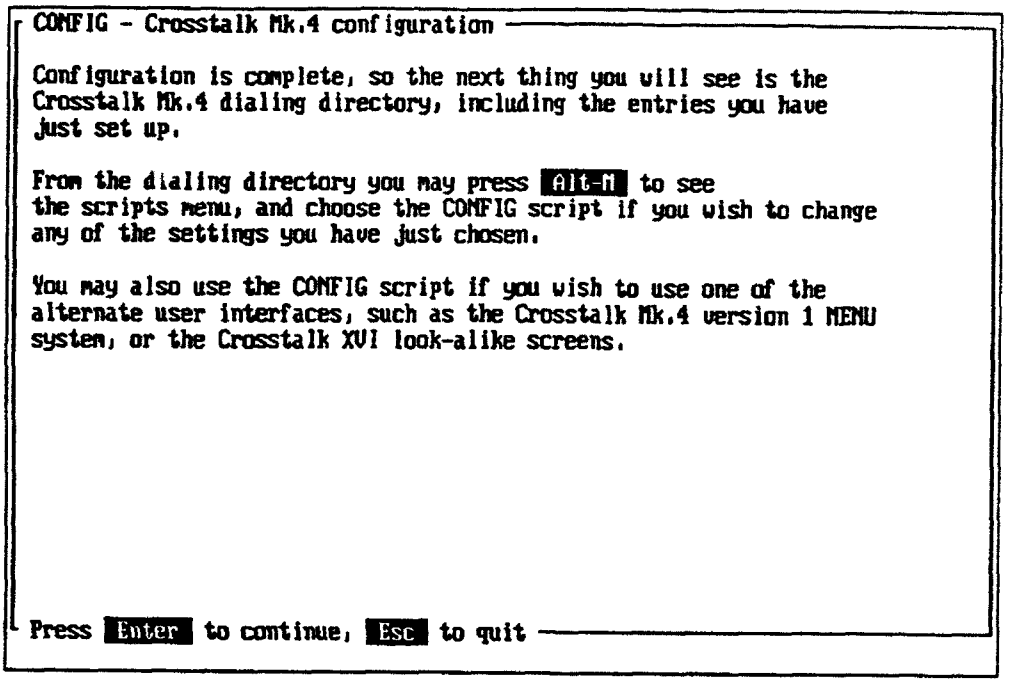

Figure 3.22. Change Settings Information.

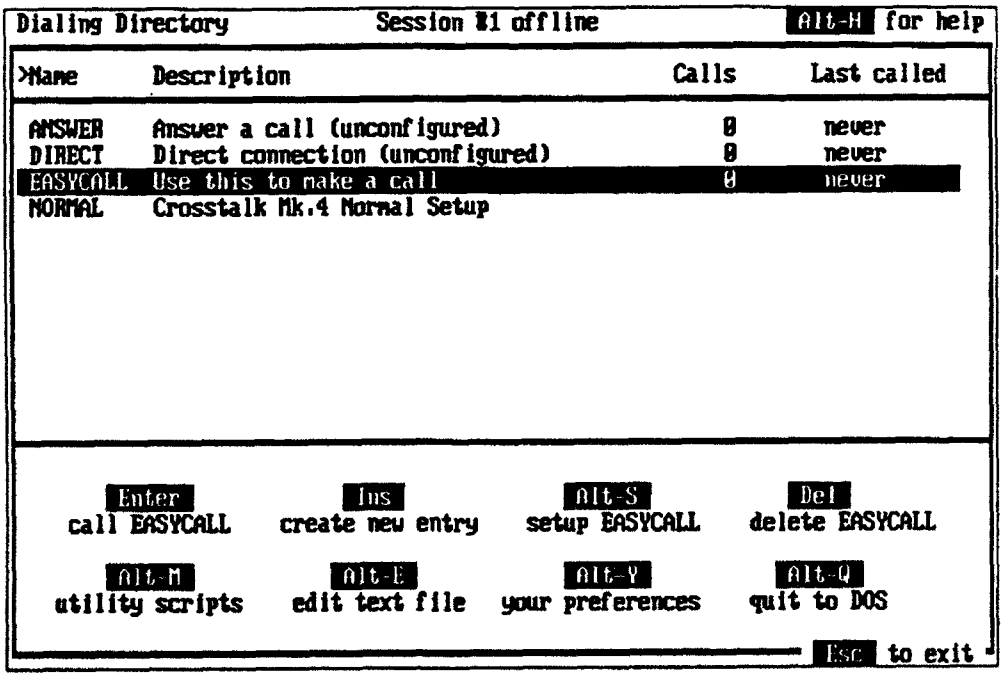

Figure 3.23. Dialing Directory.

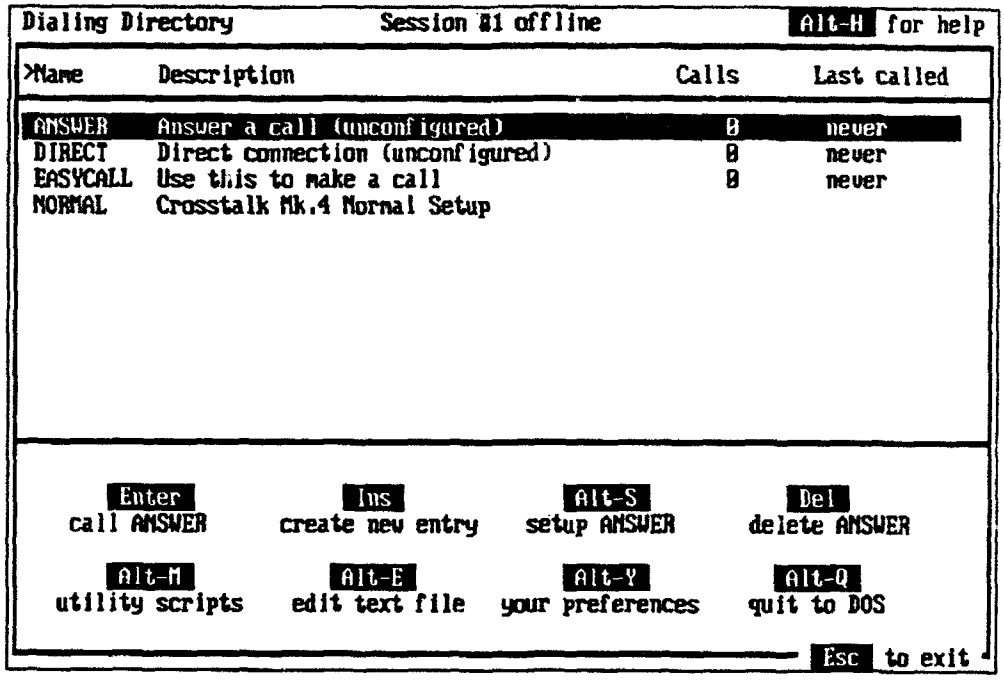

Figure 3.24. Dialing Directory with ANSWER Highlighted.

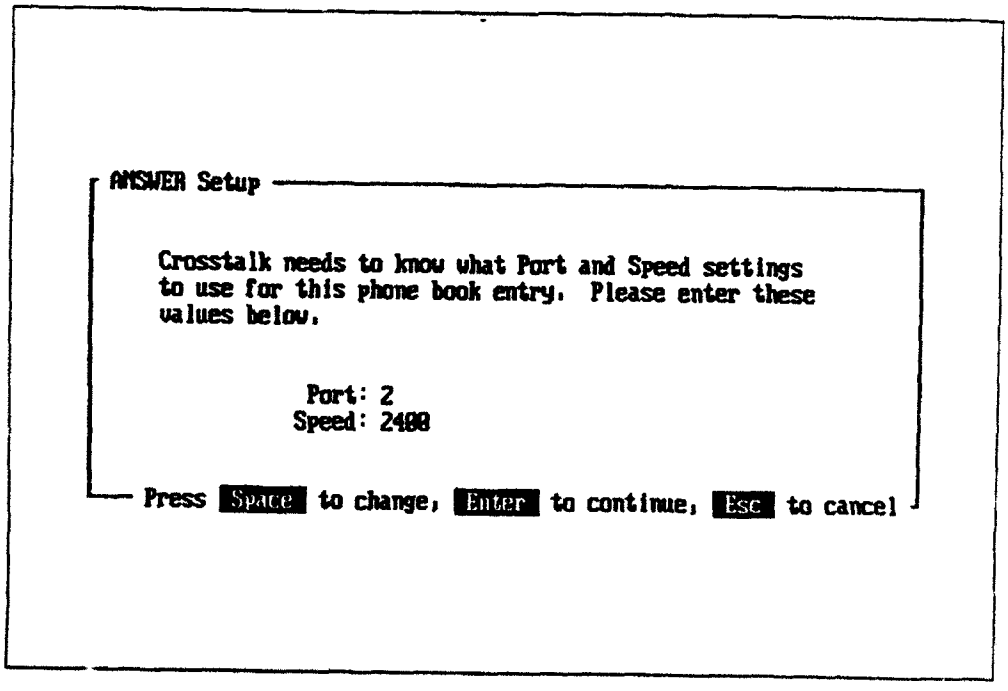

Figure 3.25. Port and Speed Setup for ANSWER.

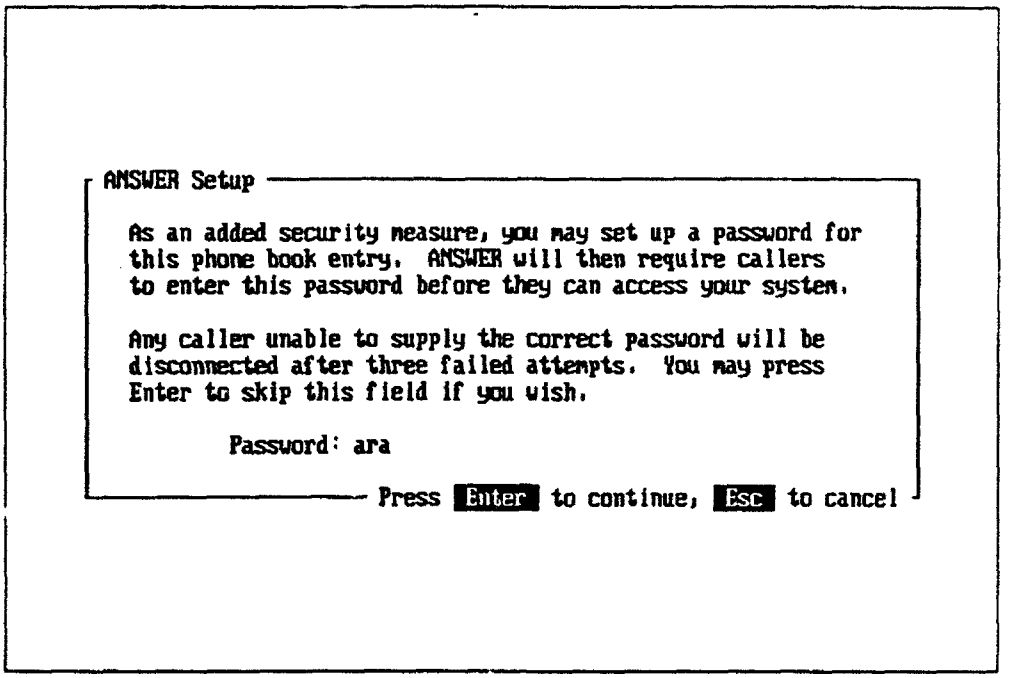

Figure 3.26. Password Setup for ANSWER.

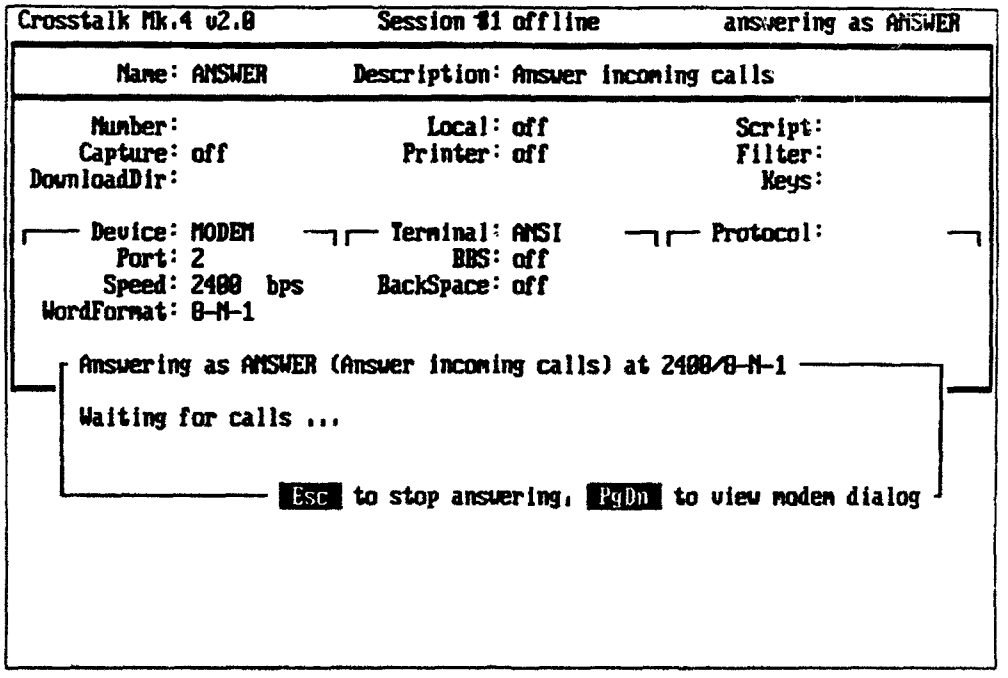

Figure 3.27. ANSWER Directory.

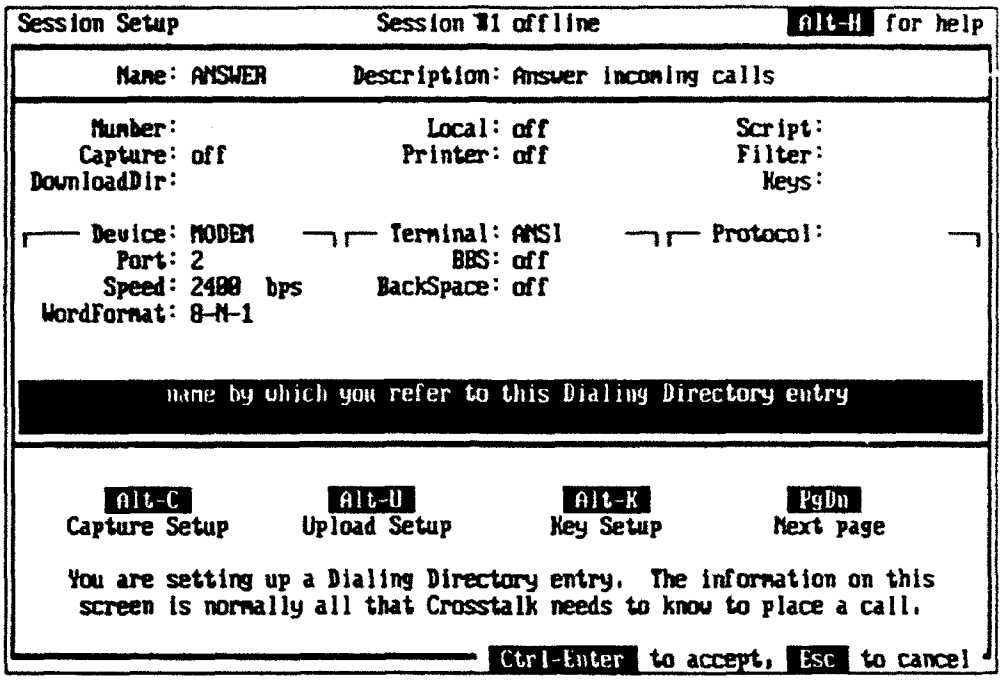

Figure 3.28. Session Setup Form for ANSWER Page 1.

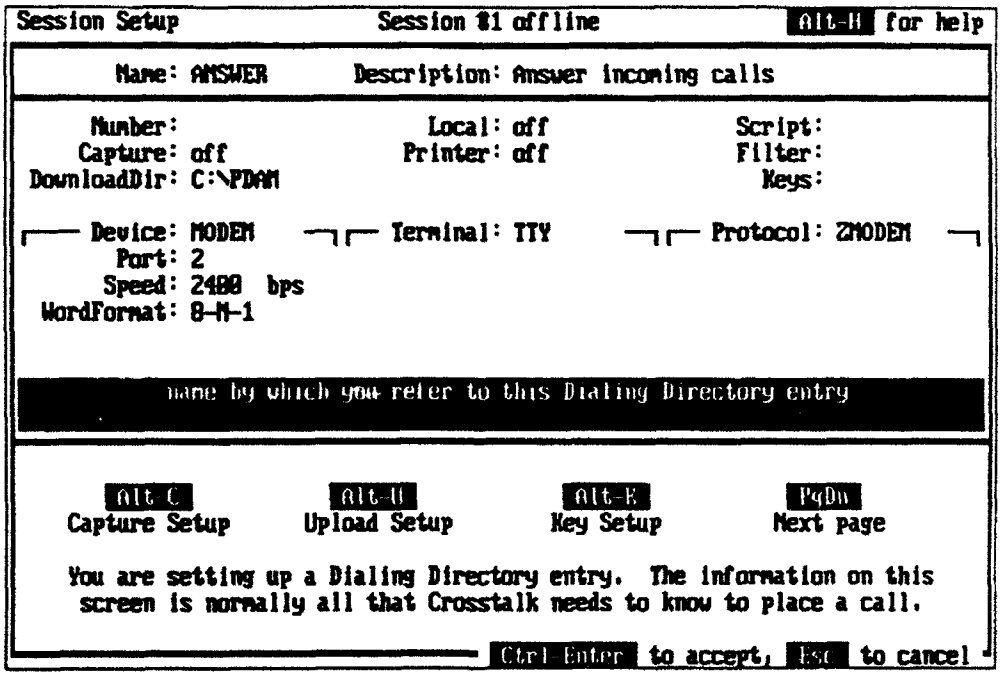

Figure 3.29. Modified Session Setup Form for ANSWER Page 1.

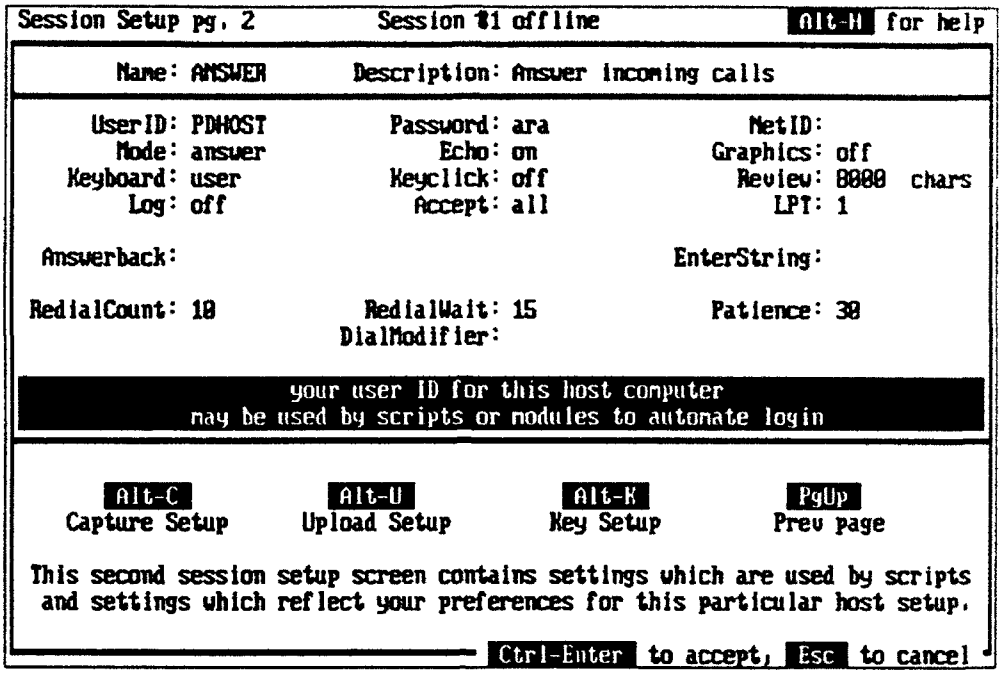

Figure 3.30. Modified Session Setup Form for ANSWER Page 2.

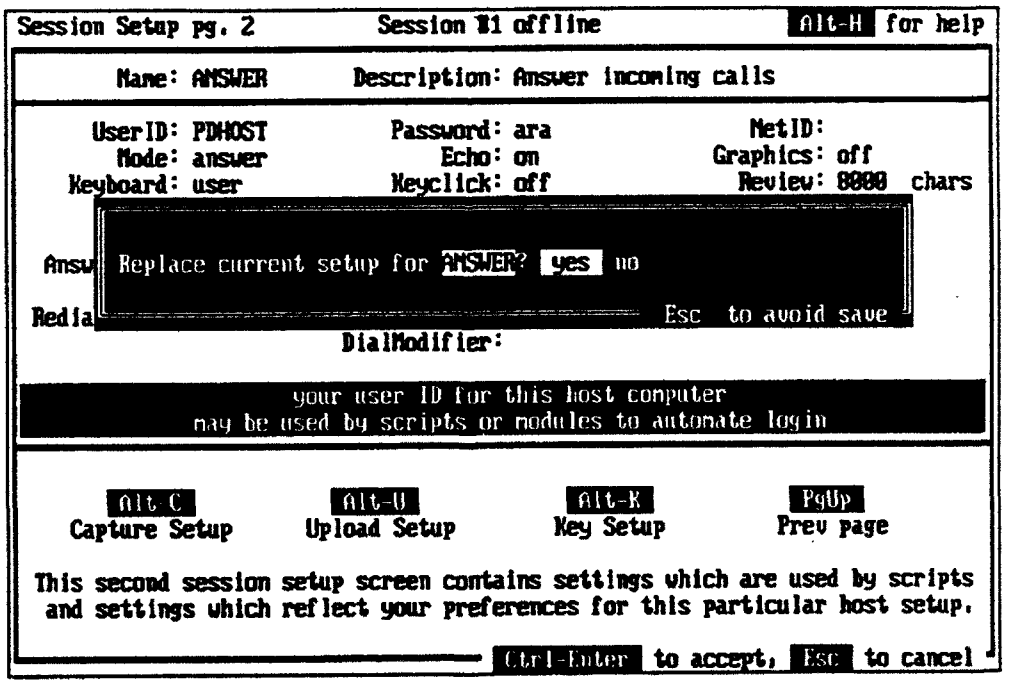

Figure 3.31. Replace Setup for Answer Prompt.

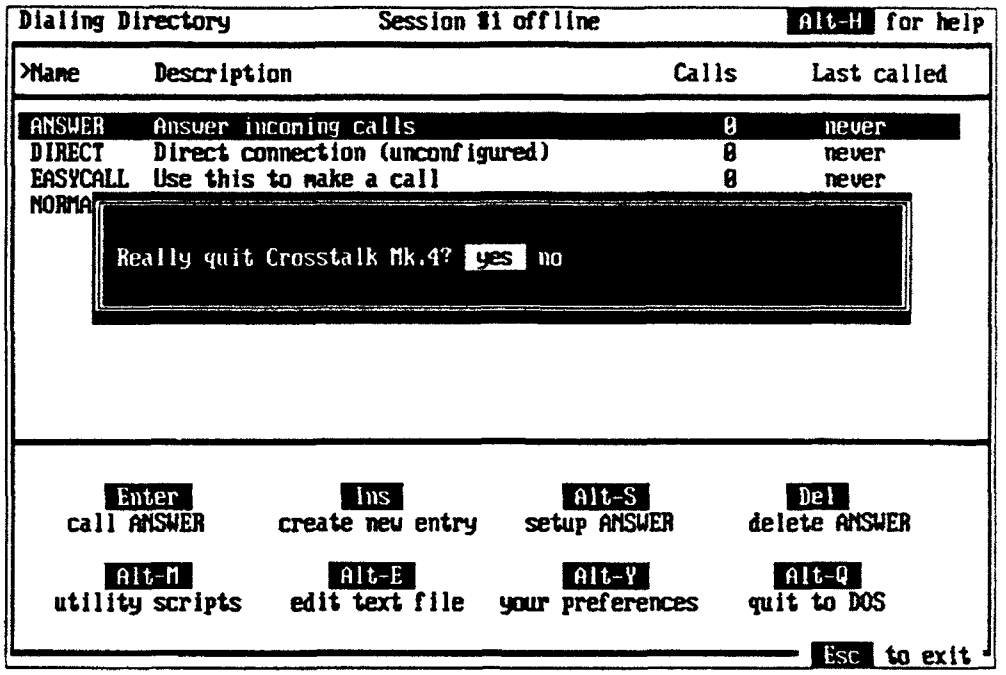

Figure 3.32. Quit Crosstalk Mk.4 Prompt.

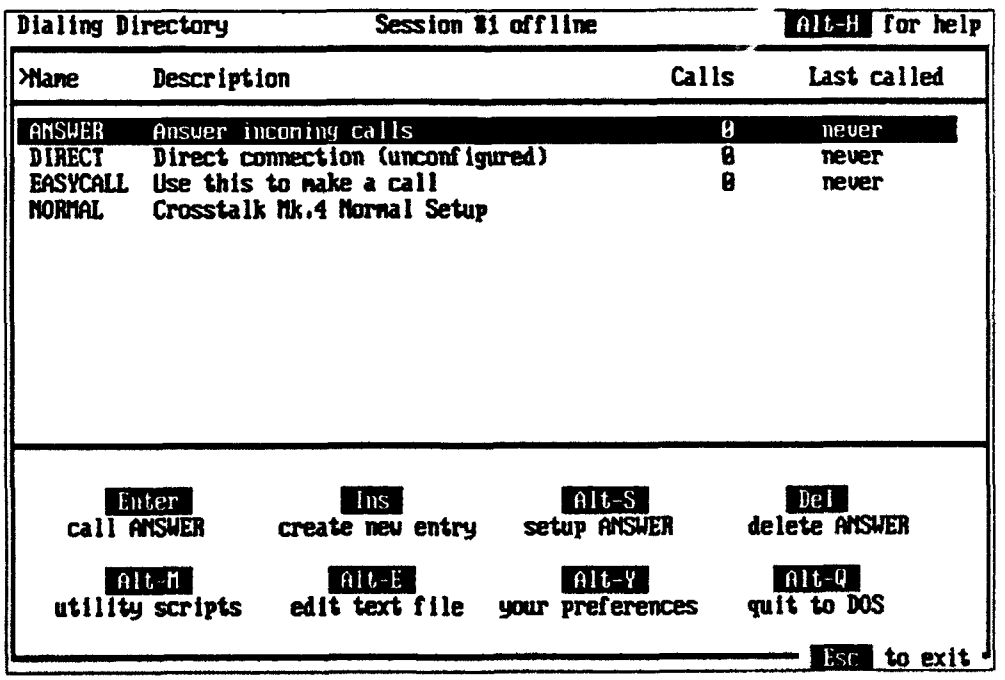

Figure 3.33. Dialing Directory with ANSWER Configured.

To exit Crosstalk Mk.4 from the ANSWER directory, the user begins by pressing the [Esc] key in the ANSWER directory, as shown in Figure 3.34, which returns the user to the Dialing Directory shown in Figure 3.33. Here, the user presses the [Alt] and [Q] keys simultaneously, to display the quit Crosstalk Mk.4 Menu, shown in Figure 3.32. The user then presses [Enter], and is returned to the DESQview 386 control program.

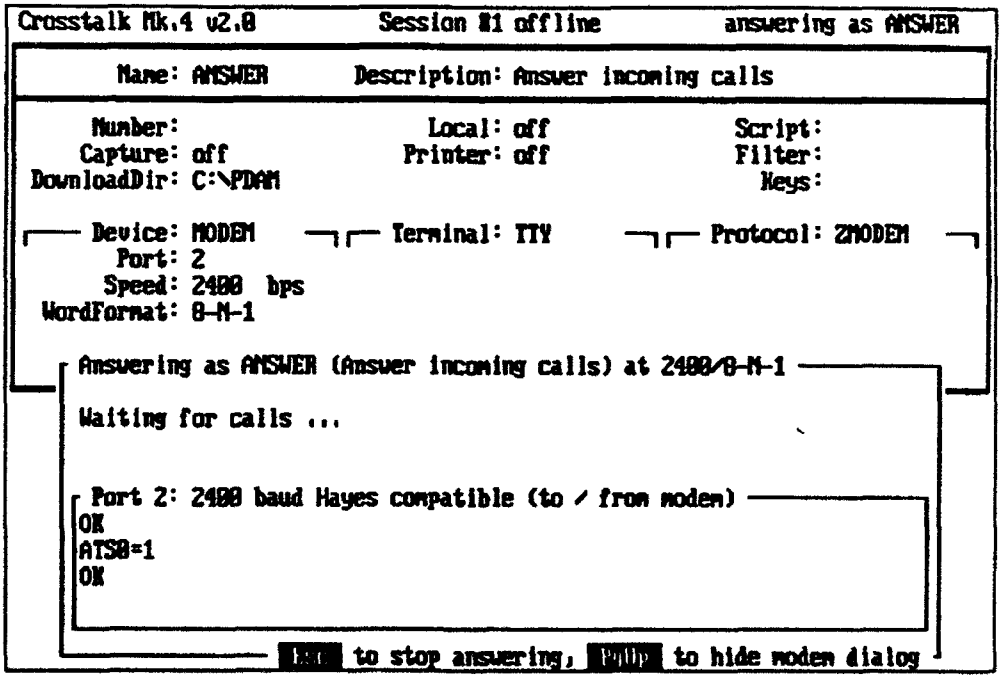

Figure 3.34. ANSWER Directory Waiting for Calls.